

Patent Claims:

1. Hydraulic piston, in particular brake piston for an automotive vehicle brake, with a thermochemically treated surface,
c h a r a c t e r i z e d by several superposed layers at the piston surface, comprising:
 - a layer of oxide that is arranged directly at the piston surface and has a thickness of at least $1\mu\text{m}$,
 - a connecting layer which is arranged beneath the layer of oxide and is mainly composed of nitrides,
 - a diffusion layer that is arranged beneath the connecting layer and includes nitrogen in a dissolved condition or separated nitrides,
wherein the connecting layer has a minimum thickness of $8\mu\text{m}$.
2. Hydraulic piston as claimed in claim 1,
c h a r a c t e r i z e d in that the connecting layer includes capillary tubes which are respectively closed at the piston surface by portions of the layer of oxide.
3. Process for surface treatment of a hydraulic piston, in particular a brake piston,
c h a r a c t e r i z e d by the following procedure:

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- nitrocarburization of the piston in a gaseous medium;
 - postoxidation of the piston in a medium yielding oxygen O_2 ;
 - machining of the oxidized surface for adjusting the surface quality.
4. Process for surface treatment of a hydraulic piston as claimed in claim 3,
c h a r a c t e r i z e d in that the nitrocarburization of the piston is carried out in several stages:
- a first stage wherein the piston is exposed to a first gaseous medium comprised of ammonia NH_3 , carbon dioxide CO_2 , and nitrogen,
 - a second stage of nitrocarburization wherein the piston is exposed to a second gaseous medium comprised of ammonia NH_3 and carbon dioxide CO_2 .
5. Process for surface treatment of a hydraulic piston as claimed in any one of claims 3 to 4,
c h a r a c t e r i z e d in that the temperature during the nitrocarburization process amounts to maximally $530^\circ C$.
6. Process for surface treatment of a hydraulic piston as claimed in any one of claims 3 to 5,

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c h a r a c t e r i z e d in that an ambient medium separated from ammonia NH_3 is provided for the piston before the postoxidation.

7. Process for surface treatment of a hydraulic piston as claimed in any one of claims 3 to 6,
c h a r a c t e r i z e d in that machining is effected by a polishing or brushing operation.

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